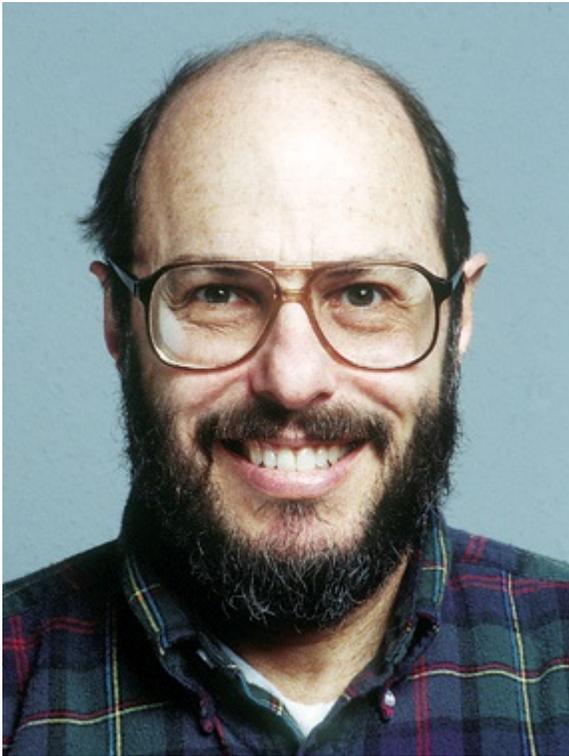


Columns

FINISHING: : Compatibility

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The answer lies in a knowledgeable understanding of which stains and finishes are compatible and which aren't

It's common to read a manufacturer's label or an article or book that includes the instruction to use a compatible stain or finish. What does this mean, actually? Which stains and finishes are compatible with each other and which aren't, and how can you know?

Compatibility between products usually means that the newly applied coating doesn't blister, or dissolve and smear, the underlying coating. Smearing is, of course, much more likely to occur if you are brushing than if you are spraying.

Compatibility also means that the newly applied coating bonds to the underlying coating. If a coating doesn't dissolve into the existing coating, you may have to scuff it with steel wool, an abrasive pad or fine sandpaper to make scratches so the two layers will interlock and bond mechanically.

As you will see, when defined these ways, compatibility actually has more to do with how the products are applied (wipe, brush, or spray), and whether or not the surface is scuff sanded between coats, than with the nature of the products themselves.

Solvents and thinners

To make sense of compatibility it's helpful to understand the difference between the terms "solvent" and "thinner." These terms are often used loosely and interchangeably, but they refer to entirely different functions provided by the volatile (evaporating) liquid in finishing products.

A solvent puts a solid into solution. Thus, a solvent for a stain or finish will dissolve or seriously damage that stain or finish even after it has fully dried.

A thinner thins a solution but doesn't dissolve a solid. Thus, a thinner has no effect on a stain or finish once it has fully dried.

The same liquid can be a solvent in one situation and a thinner in another. For example, mineral spirits (paint thinner) is a solvent for solid wax but only a thinner for oil, varnish and polyurethane. Lacquer thinner is a solvent for lacquer but only a thinner for catalyzed finishes and non-grain-raising (NGR) dyes. Water is a solvent for water-soluble dyes but only a thinner for water-based stains and finishes.

One liquid can also be both a solvent and a thinner for the same product, as lacquer thinner is for nitrocellulose lacquer and alcohol is for shellac.

Solvent

If a stain or finish contains the solvent for the underlying, dried stain or finish, the newly-applied product will dissolve the underlying stain or finish. This may not cause a problem if you are spraying, but it will result in smearing if you are wiping or brushing, especially if the underlying stain or coating contains a colorant.

Lacquer thinner (contained in lacquer and sometimes lacquer-based stains) has the potential of causing the most problems, because it is a solvent for so many different stains and finishes. These include lacquer-based stains, water-based stains, oil-soluble dyes, alcohol-soluble dyes, shellac, lacquer, and water-based finish. In addition, lacquer thinner will blister all varnish-based products if applied heavily and kept wet for a while.

Other solvents, such as alcohol (contained in shellac and alcohol-soluble dyes), mineral spirits (contained in oil, varnish, and oil- and varnish-based stains), and water (contained in water-based stains and finishes, and in water-soluble dyes), cause fewer problems than lacquer thinner, because fewer products are affected by them. The most likely situation you will experience is probably brushing water-based finish over a water-soluble dye. The water in the finish will dissolve the dye and cause it to smear.

Non-solvent

If a stain or finish doesn't contain a solvent for the underlying stain or finish, the newly applied stain or finish won't dissolve into the underlying layer and may not bond well to it. Only if the underlying layer is fairly recently applied (so it hasn't thoroughly dried), thin enough so the wood's porosity still provides an uneven surface (as is the case with stains), or scuffed to create scratches, can a good bond be guaranteed.

The most common situations where coatings are incompatible due to poor bonding occur when using varnish, polyurethane, water-based finish, and catalyzed finishes. These finishes don't bond well to themselves after the underlying layer has dried thoroughly, and all except catalyzed lacquer won't bond well to other finishes. (Catalyzed lacquer contains lacquer thinner, so it has the potential of dissolving most stains and finishes.)

It's always safest to scuff the underlying surface before applying one of these finishes (whether over itself or another finish) unless you are applying all coats within a short time frame. Manufacturers of catalyzed lacquer, and a related finish called catalyzed varnish, usually provide that time frame. A good rule of thumb for varnish, polyurethane, and water-based finish is not more than one week between coats.

Spray, brush or wipe

As you can see, any product that contains the solvent for the underlying product is compatible with it if it is sprayed. Bonding occurs chemically and is thus very strong.

Only in the case of applying a lacquer-thinner-containing finish over oil-soluble dye (a fairly rare situation) is there the potential for a problem. The dye may bleed into the coats of lacquer causing colored spots to show up in the finish over the pores. If you are using these two products together, you should apply a barrier coat of shellac in between to prevent the bleeding.

When a product that contains the solvent for the underlying stain or finish is brushed or wiped, however, part of the underlying stain or finish will be dissolved and smeared into the newly applied coating. If the underlying stain or finish contains a pigment or dye, you will make a mess that can't be corrected short of stripping and starting over.

On the other hand, products that don't dissolve into each other don't bond well to each other after the underlying coating has thoroughly dried unless you put fine scratches in it to achieve a mechanical bond. But products that don't dissolve into each other don't smear when brushed or wiped.